RESTRICTED CIRCULATION

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Agricultural Memorandum No. 471

Expectancy of heavy winter rainfall - county tables

L P Smith

As stated in Agricultural Memorandum No. 470, the consistency of the regression coefficients imply that they can be regarded as uniform for the counties comprising an area, and graphical plotting tends to confirm this. This property was, in fact, the criteria for the grouping of counties within the areas.

This being so, the deviation from an area regression by each of the counties comprising an area can be included in the constant term alone. This was the adjustment implied in the specification of county corrections in Agricultural Memorandums No's 461-469.

If such corrections are applied then it is easy to construct a table of expected heavy rainfalls in the six categories.

1 day rain	1 year, 2 years, 10 years
5 days rain	1 year, 2 years, 10 years

on a county basis.

To this has been added the maximum and the minimum expected falls for each average annual rainfall, thus indicating the spread over England and Wales of the relevant figures.

Any comments or suggestions on this paper should be referred to the author.

Meteorological Office
Bracknell

EB/7/72/60

Heaviest 1 day falls expected in 1 year

Average Annual Rainfall (mm)

COUNTY		500	550	600	650	700	750	800	850	900	950	1000
Bedford		16	17	18	19	-	-	-	-	-	-	-
Berkshire		-	-	18	19	21	22	24	25	27	-	-
Buckingham		-	-	17	18	19	20	21	23	-	-	-
Cambridge		15	16	17	18	-	-	-	-	--	-	-
Cheshire		-	-	-	-	18	19	20	22	23	24	25
Cornwall		-	-	-	-	-	-	-	23	24	25	26
Cumberland		-	-	-	-	-	-	20	21	22	23	25
Derby		-	-	-	19	20	21	22	24	25	26	27
Devon	W	-	-	-	-	-	24	25	26	27	28	29
	E	-	-	-	-	-	25	26	27	28	29	30
Dorset		-	-	-	-	24	25	26	28	29	30	31
Durham		-	-	17	18	19	20	22	23	24	25	26
Essex		16	16	17	18	-	-	-	-	-	-	-
Gloucester		-	-	-	20	21	22	23	24	25	27	28
Hampshire	E	-	-	-	20	21	23	24	26	27	29	30
	W	-	-	-	21	22	24	25	27	28	30	31
Isle of Wight		-	-	-	-	22	24	25	27	-	-	-
Hereford		-	-	20	21	22	23	24	25	26	27	28
Hertford		-	-	18	19	19	20	21	22	-	-	-
Huntingdon		16	17	17	18	-	-	-	-	-	-	-
Kent		18	18	19	20	22	23	25	26	28	-	-
Lancashire	N	-	-	-	-	-	-	20	21	22	23	25
	S	-	-	-	-	-	-	21	22	23	24	25
Leicester		-	-	18	19	20	21	-	-	-	-	-
Lincoln	Holland	17	18	18	19	-	-	-	-	-	-	-
	Kesteven	-	17	18	19	20	-	-	-	-	-	-
	Lindsey	-	17	18	19	20	-	-	-	-	-	-
Middlesex		-	17	18	19	-	-	-	-	-	-	-
Norfolk		-	16	17	18	19	-	-	-	-	-	-
Northampton		-	18	19	20	21	22	-	-	-	-	-
Northumberland		-	-	17	18	19	21	22	23	24	25	27
Nottingham		-	17	18	19	20	-	-	-	-	-	-
Oxford		-	-	18	19	20	21	22	-	-	-	-
Rutland		-	17	18	19	20	-	-	-	-	-	-
Shropshire		-	-	-	18	19	20	21	22	23	25	26
Somerset		-	-	-	-	-	21	22	24	25	26	27
Stafford		-	-	-	17	18	20	21	22	23	24	26
Suffolk		16	17	18	18	-	-	-	-	-	-	-
Surrey	E	-	17	18	19	20	22	23	25	26	-	-
	W	-	17	18	20	21	23	24	26	27	-	-
Sussex	E	-	-	-	20	21	23	24	26	27	29	-
	W	-	-	-	20	22	23	25	26	28	29	-
Warwick		-	-	17	18	19	20	-	-	-	-	-
Westmoreland		-	-	-	-	-	-	-	22	24	25	26
Wiltshire		-	-	-	-	-	22	23	24	25	26	27
Worcester		-	18	19	20	21	22	-	-	-	-	-
Yorkshire	ER	-	-	17	18	20	21	22	23	24	26	27
	NR	-	-	17	18	19	20	22	23	24	25	26
	WR	-	17	19	20	21	22	23	25	26	27	28
S Wales		-	-	-	-	-	-	24	25	26	27	28
W Wales		-	-	-	-	-	-	-	-	-	-	25
N Wales		-	-	-	-	19	20	21	22	24	25	26
Maximum		18	18	20	21	24	25	26	28	29	30	31
Minimum		15	16	17	18	18	19	20	21	22	23	25

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Heaviest 1 day falls expected in 2 years

COUNTY	500	550	600	650	700	750	800	850	900	950	1000
Bedford	20	21	22	23	-	-	-	-	-	-	-
Berkshire	-	-	21	23	25	26	28	30	32	-	-
Buckingham	-	-	21	22	23	24	25	27	-	-	-
Cambridge	19	20	21	22	-	-	-	-	-	-	-
Cheshire	-	-	-	-	22	24	25	27	28	29	31
Cornwall	-	-	-	-	-	-	-	26	28	29	31
Cumberland	-	-	-	-	-	-	25	26	27	28	30
Derby	-	-	-	23	24	26	27	28	30	31	33
Devon	-	-	-	-	-	28	30	31	32	34	35
Dorset	-	-	-	-	29	30	32	33	35	36	37
Durham	-	-	20	22	23	25	26	28	29	31	32
Essex	20	20	21	22	-	-	-	-	-	-	-
Gloucester	-	-	-	23	24	26	27	29	30	31	33
Hampshire E	-	-	-	24	25	27	29	31	32	34	36
W	-	-	-	24	26	28	30	31	33	35	37
Isle of Wight	-	-	-	-	26	28	30	31	-	-	-
Hereford	-	-	23	24	25	27	28	30	31	32	34
Hertford	-	-	21	22	23	24	25	27	-	-	-
Huntingdon	19	20	21	22	-	-	-	-	-	-	-
Kent E	21	22	23	25	27	28	30	32	34	-	-
W	20	21	22	24	26	27	29	31	33	-	-
Lancashire N	-	-	-	-	-	-	23	25	26	27	29
S	-	-	-	-	-	-	24	26	27	28	30
Leicester	-	-	22	23	24	25	-	-	-	-	-
Lincoln Holland	20	21	22	24	-	-	-	-	-	-	-
Kesteven	-	22	23	24	25	-	-	-	-	-	-
Lindsey	-	20	21	22	23	-	-	-	-	-	-
Middlesex	-	20	21	23	-	-	-	-	-	-	-
Norfolk	-	20	21	22	23	-	-	-	-	-	-
Northampton	-	20	21	22	23	25	-	-	-	-	-
Northumberland	-	-	21	22	24	25	26	28	29	31	32
Nottingham	-	22	23	24	25	-	-	-	-	-	-
Oxford	-	-	21	23	24	25	26	-	-	-	-
Rutland	-	21	22	23	24	-	-	-	-	-	-
Shropshire	-	-	-	21	23	24	26	27	28	30	31
Somerset	-	-	-	-	-	25	26	27	29	30	32
Stafford	-	-	-	21	23	24	25	27	28	30	31
Suffolk	20	20	21	22	-	-	-	-	-	-	-
Surrey E	-	20	21	23	24	26	28	30	31	-	-
W	-	21	22	24	25	27	29	31	32	-	-
Sussex	-	-	-	25	27	28	30	32	34	35	-
Warwick	-	-	21	22	24	25	-	-	-	-	-
Westmoreland	-	-	-	-	-	-	-	27	28	30	31
Wiltshire	-	-	-	-	-	26	27	28	30	31	33
Worcester	-	21	22	23	24	25	-	-	-	-	-
Yorkshire ER	-	-	20	22	23	25	26	28	29	30	32
NR	-	-	20	21	22	24	26	27	29	30	32
WR	-	22	23	24	26	27	29	30	32	33	35
S Wales	-	-	-	-	-	-	27	29	30	31	32
W Wales	-	-	-	-	-	-	-	-	-	-	29
N Wales	-	-	-	-	22	23	25	26	27	28	29
Maximum	21	22	23	25	29	30	32	33	35	36	37
Minimum	19	20	20	21	22	23	23	25	26	27	29

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Heaviest 1 day falls expected in 10 years

COUNTY	500	550	600	650	700	750	800	850	900	950	1000
Bedford	26	27	28	29	-	-	-	-	-	-	-
Berkshire	-	-	28	30	32	34	36	38	40	-	-
Buckingham	-	-	29	30	31	33	34	36	-	-	-
Cambridge	27	28	29	30	-	-	-	-	-	-	-
Cheshire	-	-	-	-	31	33	34	36	38	39	41
Cornwall	-	-	-	-	-	-	-	35	37	38	40
Cumberland	-	-	-	-	-	-	33	35	36	38	40
Derby	-	-	-	31	33	34	36	38	40	41	43
Devon W	-	-	-	-	-	38	40	41	43	45	47
Devon E	-	-	-	-	-	36	38	39	41	43	44
Dorset	-	-	-	-	37	38	40	42	44	45	47
Durham	-	-	29	31	33	35	37	39	40	42	44
Essex	26	27	29	30	-	-	-	-	-	-	-
Gloucester	-	-	-	31	32	34	36	38	39	41	43
Hampshire	-	-	-	32	34	36	38	40	42	44	46
Isle of Wight	-	-	-	-	34	36	38	40	-	-	-
Hereford	-	-	29	31	33	35	36	38	40	42	43
Huntingdom	26	27	28	29	-	-	-	-	-	-	-
Kent E	30	31	33	35	37	39	41	43	45	-	-
Kent W	28	29	31	33	35	37	39	41	43	-	-
Lancashire N	-	-	-	-	-	-	32	33	35	37	39
Lancashire S	-	-	-	-	-	-	31	33	34	36	38
Leicester	-	-	28	30	31	32	-	-	-	-	-
Lincoln Holland	28	29	30	31	-	-	-	-	-	-	-
Kesteven	-	32	33	34	35	-	-	-	-	-	-
Lindsey	-	30	31	32	33	-	-	-	-	-	-
Middlesex	-	26	27	29	-	-	-	-	-	-	-
Norfolk	-	28	29	30	31	-	-	-	-	-	-
Northampton	-	28	29	30	32	33	-	-	-	-	-
Northumberland	-	-	27	29	31	33	35	37	39	40	42
Nottingham	-	31	32	33	35	-	-	-	-	-	-
Oxford	-	-	29	31	32	33	35	-	-	-	-
Rutland	-	27	28	30	31	-	-	-	-	-	-
Shropshire	-	-	-	29	31	33	34	36	38	40	41
Somerset	-	-	-	-	-	33	35	37	39	40	42
Stafford	-	-	-	31	32	34	36	37	39	41	42
Suffolk	28	29	30	32	-	-	-	-	-	-	-
Surrey E	-	26	27	29	31	33	35	37	39	-	-
W	-	27	29	31	33	35	37	39	41	-	-
Sussex E	-	-	-	29	31	33	35	37	39	41	-
W	-	-	-	32	34	36	38	40	42	44	-
Warwick	-	-	29	30	31	33	-	-	-	-	-
Westmoreland	-	-	-	-	-	-	-	35	36	38	40
Wiltshire	-	-	-	-	-	33	35	37	39	40	42
Yorkshire ER	-	-	27	28	30	32	34	36	38	40	41
NR	-	-	27	29	31	33	35	36	38	41	42
WR	-	29	30	32	34	36	38	40	42	44	46
S Wales	-	-	-	-	-	-	39	40	42	43	44
W Wales	-	-	-	-	-	-	-	-	-	-	38
N Wales	-	-	-	-	32	33	34	35	37	38	39
Hertford	-	-	27	29	30	31	32	34	-	-	-
Worcester	-	27	28	29	30	32	-	-	-	-	-
Maximum	30	31	33	35	37	39	41	42	44	45	47
Minimum	26	26	27	28	30	32	31	33	34	36	38

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Heaviest 5 day falls expected in 1 year

COUNTY		500	550	600	650	700	750	800	850	900	950	1000
Bedford		29	32	34	37	-	-	-	-	-	-	-
Berkshire		-	-	35	39	43	46	50	53	57	-	-
Buckingham		-	-	33	36	39	41	44	47	-	-	-
Cambridge		28	31	33	36	-	-	-	-	-	-	-
Cheshire		-	-	-	-	35	38	41	43	46	49	52
Cornwall		-	-	-	-	-	-	-	47	51	54	57
Cumberland		-	-	-	-	-	-	41	44	46	49	51
Derby		-	-	-	35	38	41	43	46	49	51	54
Devon	W	-	-	-	-	-	50	53	56	59	62	65
	E	-	-	-	-	-	52	55	58	61	64	67
Dorset		-	-	-	-	49	52	56	59	62	65	68
Durham		-	-	33	36	38	41	44	47	50	53	56
Essex		30	32	34	37	-	-	-	-	-	-	-
Gloucester		-	-	-	37	41	44	47	50	53	56	59
Hampshire	E	-	-	-	40	44	48	51	55	58	62	66
	W	-	-	-	42	46	50	53	57	60	64	68
Isle of Wight		-	-	-	-	46	50	53	57	-	-	-
Hereford		-	-	40	43	46	49	52	55	58	61	64
Hertford		-	-	35	37	40	42	44	46	-	-	-
Huntingdon		30	32	35	37	-	-	-	-	-	-	-
Kent	E	33	35	38	41	45	49	52	56	59	-	-
	W	32	35	37	41	44	48	52	55	59	-	-
Lancashire	N	-	-	-	-	-	-	40	43	45	48	50
	S	-	-	-	-	-	-	42	44	47	50	52
Leicester		-	-	34	36	38	40	-	-	-	-	-
Lincoln	Holland	28	31	33	35	-	-	-	-	-	-	-
	Kesteven	-	33	35	37	39	-	-	-	-	-	-
	Lindsey	-	32	34	36	38	-	-	-	-	-	-
Middlesex		-	32	34	38	-	-	-	-	-	-	-
Norfolk		-	31	33	36	38	-	-	-	-	-	-
Northampton		-	31	34	37	40	42	-	-	-	-	-
Northumberland		-	-	31	34	37	39	42	45	48	51	54
Nottingham		-	33	35	37	39	-	-	-	-	-	-
Oxford		-	-	35	38	40	43	46	-	-	-	-
Rutland		-	32	34	36	38	-	-	-	-	-	-
Shropshire		-	-	-	36	39	42	44	47	50	53	55
Somerset		-	-	-	-	-	44	48	51	54	57	60
Stafford		-	-	-	34	37	40	42	45	48	51	53
Suffolk		29	32	34	37	-	-	-	-	-	-	-
Surrey	E	-	32	34	38	42	45	49	52	56	-	-
	W	-	32	35	38	42	46	49	53	56	-	-
Sussex	E	-	-	-	44	48	51	55	58	62	66	-
	W	-	-	-	43	46	50	54	57	60	64	-
Warwick		-	-	33	36	39	42	-	-	-	-	-
Westmoreland		-	-	-	-	-	-	-	43	45	48	50
Wiltshire		-	-	-	-	-	45	48	51	54	57	60
Worcester		-	32	34	37	39	42	-	-	-	-	-
Yorkshire	ER	-	-	32	35	38	40	43	46	49	52	55
	NR	-	-	32	35	37	40	43	46	49	52	55
	WR	-	33	36	39	41	44	47	50	53	56	59
S Wales		-	-	-	-	-	-	50	52	55	57	59
W Wales		-	-	-	-	-	-	-	-	-	-	52
N Wales		-	-	-	-	40	42	44	47	49	52	54
Maximum		33	35	40	44	49	52	56	59	62	65	68
Minimum		28	31	31	34	35	38	40	43	45	48	50

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Heaviest 5 day falls expected in 2 years

COUNTY		500	550	600	650	700	750	800	850	900	950	1000
Bedford		35	37	40	42	-	-	-	-	-	-	-
Berkshire		-	-	41	45	50	54	58	62	67	-	-
Buckingham		-	-	39	42	46	49	53	57	-	-	-
Cambridge		34	36	39	41	-	-	-	-	-	-	-
Cheshire		-	-	-	-	41	45	48	51	55	58	62
Cornwall		-	-	-	-	-	-	-	54	58	61	65
Cumberland		-	-	-	-	-	-	49	52	54	57	60
Derby		-	-	-	42	45	49	52	55	59	62	65
Devon	W	-	-	-	-	-	58	61	65	68	72	75
	E	-	-	-	--	-	59	63	66	70	73	77
Dorset		-	-	-	-	57	61	64	68	71	75	78
Durham		-	-	39	43	46	50	53	57	60	64	67
Essex		36	38	41	43	-	-	-	-	-	-	-
Gloucester		-	-	-	43	47	50	54	57	61	64	68
Hampshire	E	-	-	-	46	50	55	59	63	68	72	76
	W	-	-	-	49	54	58	62	66	71	75	79
Isle of Wight		-	-	-	-	54	58	62	66	-	-	-
Hereford		-	-	47	51	54	58	62	65	68	72	75
Hertford		-	-	41	44	47	49	52	54	-	-	-
Huntingdon		34	37	39	42	-	-	-	-	-	-	-
Kent	E	39	42	45	49	53	57	62	66	70	-	-
	W	38	40	43	47	51	56	60	64	68	-	-
Lancashire	N	-	-	-	-	-	-	48	51	53	56	59
	S	-	-	-	-	-	-	49	53	56	59	62
Leicester		-	-	40	42	45	47	-	-	-	-	-
Lincoln	Holland	35	37	40	43	-	-	-	-	-	-	-
	Kesteven	-	38	41	43	45	-	-	-	-	-	-
	Lindsey	-	37	40	42	44	-	-	-	-	-	-
Middlesex		-	38	41	44	-	-	-	-	-	-	-
Norfolk		-	36	39	41	44	-	-	-	-	-	-
Northampton		-	36	39	43	46	50	-	-	-	-	-
Northumberland		-	-	37	41	44	48	51	55	58	62	65
Nottingham		-	39	41	44	46	-	-	-	-	-	-
Oxford		-	-	40	43	47	50	54	-	-	-	-
Rutland		-	38	40	42	45	-	-	-	-	-	-
Shropshire		-	-	-	41	44	47	51	54	57	61	64
Somerset		-	-	-	-	-	52	55	59	62	66	69
Stafford		-	-	-	40	43	47	50	53	57	60	64
Suffolk		35	38	40	43	-	-	-	-	-	-	-
Surrey	E	-	38	41	44	49	53	58	62	66	-	-
	W	-	41	43	48	52	56	60	65	69	-	-
Sussex	E	-	-	-	52	56	60	65	69	73	77	-
	W	-	-	-	50	54	58	63	67	71	75	-
Warwick		-	-	38	42	45	49	-	-	-	-	-
Westmoreland		-	-	-	-	-	-	-	55	57	60	63
Wiltshire		-	-	-	-	-	53	56	60	63	67	70
Worcester		-	37	40	44	47	51	-	-	-	-	-
Yorkshire	ER	-	-	37	41	44	48	51	55	58	62	65
	NR	-	-	38	42	45	49	52	56	59	63	66
	WR	-	38	42	45	49	52	56	59	63	66	70
S Wales		-	-	-	-	-	-	56	59	61	64	67
W Wales		-	-	-	-	-	-	-	-	-	-	60
N Wales		-	-	-	-	47	50	53	56	58	61	64
Maximum		39	42	47	52	57	61	64	69	73	77	79
Minimum		34	36	37	40	41	45	48	51	53	56	59

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Heaviest 5 day falls expected in 10 years

COUNTY		500	550	600	650	700	750	800	850	900	950	1000
Bedford		45	48	51	54	-	-	-	-	-	-	-
Berkshire		-	-	55	60	65	70	75	80	85	-	-
Buckingham		-	-	50	54	58	62	66	70	-	-	-
Cambridge		44	47	50	53	-	-	-	-	-	-	-
Cheshire		-	-	-	-	54	58	62	66	70	75	79
Cornwall		-	-	-	-	-	-	-	66	70	75	79
Cumberland		-	-	-	-	-	-	62	66	70	73	77
Derby		-	-	-	54	59	63	67	71	75	79	83
Devon	W	-	-	-	-	-	71	75	79	83	87	91
	E	-	-	-	-	-	72	76	81	85	89	93
Dorset		-	-	-	-	71	76	80	84	88	92	96
Durham		-	-	56	60	64	68	72	76	81	85	89
Essex		46	49	52	55	-	-	-	-	-	-	-
Gloucester		-	-	-	55	59	63	67	72	76	80	84
Hampshire	E	-	-	-	60	65	70	75	80	85	90	95
	W	-	-	-	63	68	73	78	83	88	93	98
Isle of Wight		-	-	-	-	68	73	78	83	-	-	-
Hereford		-	-	59	63	67	72	76	80	84	88	92
Hertford		-	-	55	58	61	64	67	70	-	-	-
Huntingdon		44	47	50	53	-	-	-	-	-	-	-
Kent	E	52	55	58	63	68	73	78	83	88	-	-
	W	50	53	56	61	66	71	76	81	86	-	-
Lancashire	N	-	-	-	-	-	-	59	63	66	70	74
	S	-	-	-	-	-	-	61	65	68	72	76
Leicester		-	-	49	52	56	60	-	-	-	-	-
Lincoln	Holland	46	48	51	54	-	-	-	-	-	-	-
	Kesteven	-	47	51	55	59	-	-	-	-	-	-
	Lindsey	-	46	50	54	58	-	-	-	-	-	-
Middlesex		-	50	53	58	-	-	-	-	-	-	-
Norfolk		-	47	50	53	56	-	-	-	-	-	-
Northampton		-	47	51	56	60	64	-	-	-	-	-
Northumberland		-	-	52	56	60	64	68	72	76	80	84
Nottingham		-	49	53	57	61	-	-	-	-	-	-
Oxford		-	-	53	57	61	65	69	-	-	-	-
Rutland		-	45	49	52	56	-	-	-	-	-	-
Shropshire		-	-	-	53	57	61	65	69	73	77	81
Somerset		-	-	-	-	-	65	70	74	78	82	86
Stafford		-	-	-	52	56	60	65	69	73	77	81
Suffolk		48	51	54	56	-	-	-	-	-	-	-
Surrey	E	-	50	53	58	63	68	73	78	83	88	93
	W	-	54	57	62	67	72	77	82	87	92	97
Sussex	E	-	-	-	63	68	73	78	83	88	93	98
	W	-	-	-	64	69	74	79	84	89	94	99
Warwick		-	-	49	53	57	62	-	-	-	-	-
Westmoreland		-	-	-	-	-	-	-	68	71	75	79
Wiltshire		-	-	-	-	-	67	71	75	79	83	88
Worcester		-	48	52	56	61	65	-	-	-	-	-
Yorkshire	ER	-	-	47	51	55	59	64	68	72	76	80
	NR	-	-	52	56	61	65	69	73	77	81	85
	WR	-	50	54	58	62	66	70	74	78	82	86
S Wales		-	-	-	-	-	-	72	75	78	81	84
W Wales		-	-	-	-	-	-	-	-	-	-	76
N Wales		-	-	-	-	60	63	66	69	72	75	78
Maximum		52	55	59	64	71	76	80	84	89	94	99
Minimum		44	46	47	51	54	58	59	63	66	70	74

EB/7/72/60